

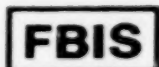
JPRS 80022

3 February 1982

West Europe Report

SCIENCE AND TECHNOLOGY

No. 89



FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

WEST EUROPE REPORT SCIENCE AND TECHNOLOGY

No. 89

CONTENTS

ELECTRONICS

Rifa Provides High-Technology User-Adapted Circuits (Ulla Karlsson; NY TEKNIK, 12 Nov 81).....	1
State-Owned Microelectronics Firm Builds New Facility (Erik Mellgren; NY TEKNIK, 12 Nov 81).....	4
190 Million Francs in Next Five Years for VLSI Research (J.-P. Della Mussia; ELECTRONIQUE ACTUALITES, 13 Nov 81).....	7

ENERGY

Synthetic Natural Gas Produced in Coal Gasification Method (VDI NACHRICHTEN, 23 Oct 81).....	10
FRG Proceeds Cautiously With Coal Conversion Program (CHEMISCHE INDUSTRIE, Nov 81).....	12
Demonstration Coal Liquefaction Plant in Voelklingen (Guenter Hollenstein; FRANKFURTER RUNDSCHAU, 21 Nov 81).....	14
Briefs Fuel Oil-Coal Mixture	16

INDUSTRIAL TECHNOLOGY

Renault Puts Second-Generation Robots Into Service (G. Bidal; ELECTRONIQUE ACTUALITES, 13 Nov 81).....	17
Plan Presented To Develop Machine Tool Industry (AFP SCIENCES, 3 Dec 81).....	19

SCIENCE POLICY

Ministry of Research, Technology To Be Reorganized (AFP SCIENCES, 3 Dec 81).....	21
-------------------------------------------------------------------------------------	----

Briefs Research Budget Adopted	24
-----------------------------------	----

ERRATUM: In JPRS 79836 of 11 January 1982, No 87 of this series, in the article entitled "R & D: France, FRG Cooperation, FRG Budget Outlines," the beginning of the final paragraph on page 41 should read: 3) Modern technology for the use of coal, the gasification of coal, stressed Chevenment and von Bulow... (changing "charcoal" to "coal").

TRANSPORTATION

British Dirigible: Modern Materials, Novel Propulsion (SCIENCES & Avenir, Nov 81).....	25
-------------------------------------------------------------------------------------------	----

Independent Company Designs 'VSS' for Fiat (L'ARGUS DE L'AUTOMOBILE, 29 Oct 81).....	27
-----------------------------------------------------------------------------------------	----

Renault 5 Line Improved for Better Mileage (L'ARGUS DE L'AUTOMOBILE, 5 Nov 81).....	32
----------------------------------------------------------------------------------------	----

Briefs New Generation Fiat 127	34
-----------------------------------	----

ELECTRONICS

RIFA PROVIDES HIGH-TECHNOLOGY USER-ADAPTED CIRCUITS

Stockholm NY TEKNIK in Swedish 12 Nov 81 p 56

[Article by Ulla Karlsson]

[Text] By international standards, Sweden has a small semiconductor industry, but by avoiding the production of standard circuits this industry has done well, nevertheless. By 1985 the three Swedish manufacturers Rifa, Asea-Hafo, and Saab-Scania's microelectronics division hope to have an annual growth between 20 and 30 percent. This year sales will amount to about 450 million.

The largest semiconductor factory in northern Europe is in Kista outside Stockholm. The factory employs 950 workers. The company is Rifa, a totally Swedish semiconductor manufacturer. Rifa develops electronic circuits that are of great importance in the more and more rapid computerization process.

Rifa, Radio Industrins Fabriks AB, was formed in 1942 by several Swedish companies to guarantee the country's supply of components during the war. One year after the war ended the company was bought by LM Ericsson (LME) and Asea. Asea backed out 1 year later, however. Since then, Rifa has been a wholly owned subsidiary of LME.

Rifa, like other Swedish semiconductor companies, has chosen to produce user-adapted circuits. This is an area well suited to Sweden. In the production of user-adapted circuits it is not necessary, as it is in the production of memories, to have available the latest technology. It is more of an advantage to be a step behind and learn from the mistakes of others. It is also an advantage to be located as near the customer as possible.

The production of user-adapted circuits is also a field that is growing throughout the world.

Suits Telephony

Today Rifa is concentrating on integrated circuits. Up to this year the company worked only with so-called bipolar technology. This technology provides circuits that are faster and able to withstand higher voltages than those produced by the MOS technology which predominates today. (MOS technology means very simply that the building blocks of integrated circuits--transistors--are made of three layers of materials--metal, oxide, and a semiconducting material. The semiconducting material most often is silicon.)

Rifa chose to manufacture bipolar circuits because the properties of these circuits are needed in telephony. LME purchases 37 percent of Rifa's production, as well. This is also because LME does not dare commission other companies to produce components. Such commissions often reveal much about a company's knowledge.

With bipolar circuits, both analog and digital circuit functions are manufactured on the same chip. This is something only a few companies in the world are able to do. Rifa simply has specialized in interfaces between digital parts of a system and their often analog surroundings.

Investment in MOS

Now, however, the LME management has discovered that Rifa must also be capable of producing MOS circuits. For this reason, LME is investing 30 million kronor in a semiconductor laboratory for MOS circuits. The technology, which was imported from the United States, is the very latest in the commercial production of MOS circuits (line widths of 315 microns). The laboratory is the most modern of its type in Europe. Last summer engineers also successfully produced the company's first memory (4 K N-MOS).

Rifa's investment in MOS technology also means that the company has entered a field where previously Asea-Hafo was alone. Rifa has chosen the new C-MOS silicon gate technology, whereas Asea-Hafo uses the older, more well known C-MOS metal gate. Asea also utilizes the more sophisticated and expensive SOS (silicon on sapphire) technology.

Hybrid Circuits

Rifa also has a division for producing hybrid circuits. These are circuits in which the conductive pattern, and sometimes resistors and capacitors, are made of a thin film. The active circuits--circuits that process signals in some way, for example amplify them--are then attached to the circuit. Most often these are integrated circuits. Engineers in the hybrid division now are conducting intensive research on a new ceramic packing method--the chip carrier (see NY TEKNIK 1981:29). This is a technology that Saab-Scania, the smallest microelectronics manufacturer in Sweden from a sales standpoint, has been alone in utilizing thus far.

The management of Rifa is also considering about 40 new products.

These include components made of gallium arsenide, a semiconductor material that is at least 5 times faster than silicon. Thus, gallium arsenide can be used to produce extremely fast circuits.

Rifa is investing heavily in the future. In the past 5 years 400 million kronor has been invested in buildings and equipment. During the next few years investments are estimated at about 50 million kronor per year, which may be compared to estimated sales of 350 million kronor annually.

Up to now LM Ericsson has contributed to the investments. Among other things, LME has invested 20 million kronor to construct a design center for high-technology integrated circuits at Rifa. Beginning this year, however, Rifa's managing director Stig Larsson believes that further investments can be financed with the company's own funds.

Rifa's sales in 1981 are estimated at 350 million kronor. The management of the company estimates that by 1985 this figure will have doubled.

9336
CSO: 3102/88

ELECTRONICS

STATE-OWNED MICROELECTRONICS FIRM BUILDS NEW FACILITY

Stockholm NY TEKNIK in Swedish 12 Nov 81 p 48

[Article by Erik Mellgren]

[Text] The grey glass facade is divided by thin aluminum window bars. The roof of the factory lies above lattice girders of blue painted steel pipes. It is all supported by stays from a number of poles along the middle of the building.

Here in Newport in southern Wales, the state-owned Inmos semiconductor company is building its new plant, one of the most important investments in the field of microelectronics in Great Britain. I walk around in the half-finished factory. Floodlights illuminate the naked concrete floor. Dick Selwood of Inmos points out various details and explains how this construction method provides a large free area. He shows how all service work and changes in the electrical wiring can be done from certain service passageways without intruding into the "clean room," the heart of the factory.

Glass and Iron

In the clean room, where the air is filtered extremely carefully, where the employees wear masks and special protective clothing, silicon plates will be converted into integrated circuits, a process with about 50 stages requiring several days for each plate.

"It will be clear from the outside that we have a highly developed technological process," Dick Selwood said.

"American semiconductor companies have such nondescript building that they could just as well be banks."

In one way the building is part of an old British tradition of building with glass and iron. Crystal Palace was constructed in this way in the late 19th century when British industry led the rest of the world.

The Inmos plant is an attempt to regain that position in the field of microelectronics.

50 Million Pounds

It was the former Labor government that decided to invest 50 million pounds in Inmos. At the same time a software company, Insac, and a company that sells word processing equipment, Nexos, were formed.

Three persons now in management positions in the company, including managing director Richard Petritz, are co-founders and minority stockholders in the company. Previously Petritz was head of the Texas Instruments research and development laboratory. In 1969 he founded the successful Mostek semiconductor company.

Inmos has its headquarters in Bristol, several miles east of Newport on the English side of the Severn River. There are also facilities for process development and production in Colorado Springs in the United States.

Out on the Market

Inmos's first products are already out on the market. They are memory circuits (16 K static RAM).

The Inmos memories are manufactured by a less complicated technique than those of competitors. Despite this, they are the fastest memories on the market, which is explained by their better "architecture."

This may be a result of the British influence--Great Britain historically has had advanced research precisely in the area of computer architecture, although this research seldom has been converted into commercial success.

In the beginning Inmos goal was to become one of the first companies to produce 256 K memory circuits. It will be several years before this can be accomplished, according to company spokesmen.

The company is now distributing samples of its new 64 K memory. Volume production of these will begin "as soon as possible," according to Philip Mattos, an Inmos technician.

The present version has a cycle time of 150 nanoseconds, an even faster one will come out around the first of next year, and in February or March an additional version with a cycle time of 100 nanoseconds will be produced.

Microcomputers

Another goal was to create an integrated microcomputer circuit that would be superior to present microcomputers. Today the company refuses to divulge any information at all on this development.

"The microcomputer is coming, but we cannot say when at present and we do not wish to divulge any information before the development work is complete."

Start in Newport in 1982

Production in Newport will begin during 1982. First the process will be developed in Colorado Springs. Inmos has opted for the most advanced production equipment presently available.

The location in Newport is the result of pressure from above. The Inmos management would rather have the factory in Bristol, but southern Wales is a "support area."

According to the agreement between Inmos and the Labor government the state subsidies were to be paid in two installments of 25 million pounds each. Only after the company agreed to construct the new plant in Newport did the new Conservative government give the go-ahead for payment of the second installment.

The factory and production equipment will cost about 30 million pounds.

9336

CSO: 3102/88

ELECTRONICS

190 MILLION FRANCS IN NEXT FIVE YEARS FOR VLSI RESEARCH

Paris ELECTRONIQUE ACTUALITES in French 13 Nov 81 pp 1, 12

[Article by J.-P. Della Mussia]

[Text] Grenoble--The LETI [Electronics and Informatics Technology Laboratory (of the AEC [Atomic Energy Commission])] now awaits only the green light from its oversight agency, the AEC, and from the different administration bodies concerned with the adoption of a new VLSI [Very-Large-Scale Integration] plan, to begin major work on the Grenoble site. The different technological installations, which until now have been spread out over the site, must now be regrouped according to the orientation of their activities, and, above all, a building must now be erected devoted entirely to microelectronics.

At the same time, the permanent staff of the laboratory must be considerably increased, going from 450 persons in 1981 to 620 persons in 1986, the largest increase being that of the components research sector (from 230 persons to 370 persons). In microelectronics, the aim of the plan is to prepare the way for the 1990 generation of sub-micron integrated circuits. LETI officials are hopeful that ground will be broken for the new buildings by the beginning of 1982. Planned investments over the period 1982-1986 total Fr190 million.

A Return to Its Original Orientation

For the past several years, the LETI has made a distinct effort to gradually transfer its applied research teams to industry, the largest such movement having been to EFCIS [Research and Manufacture of Integrated Circuits]. This is quite normal and shows that its applied research efforts have proven worthy of concrete furtherance. But the laboratory feels it is time now to take the lead in regard to industrial developmental effort and to return to its original orientation: Research aimed at innovative industrial methods rather than mere industrial handholding. Thus, a plan has been drawn up and priorities defined for the period 1982-1986. The extent of these priorities is measurable by its staff increases and its investments in new buildings. As regards staffing, current materials activities employ 80 persons (18 percent), system activities 140 persons (31 percent), and components activities 230 persons (51 percent). The plan provides for an increase to 90 persons (14 percent) on equipment, to 160 persons (26 percent) on systems, and to 370 persons (60 percent) on components. Of the latter, microelectronics will get the lion's share with 160 persons in 1986, compared with

80 persons in 1981. As regards buildings, the plan calls in particular for the construction of a microelectronics laboratory with 6,000 square meters of floor space, 1,500 square meters of which will be clean rooms. It will contain the teams working silicon integrated circuits, bubble memories, Josephson-effect devices, and ordinary submicronic techniques, as well as the mask and CAO [computer-aided operation] services. Later, the teams working on so-called "in-out" components (sensors, display electronics, microsystem electronics) will join them, thus bringing together the entire components sector. Eventually, by 1986, the plan calls for bringing together on the same site all the teams of the "materials" sector, which are now very widely scattered.

Circuits Containing 10 Million Components

In the cycle that begins with basic research (the work of researchers like those of the CNRS [National Center for Scientific Research], the AEC, and, specifically, the CNET [National Center for Telecommunications Studies]) and culminates in industrial mass production, the LETI positions itself at about the halfway point, with, as we have seen, an orientation toward applied research and the transfer of know-how to industry. Thus, in the field of microelectronics, which is to be the object of heavy investments, the LETI works in close cooperation on basic research with the CNRS, within the framework of a group called the GCIS [expansion unknown], and with the the CNET Grenoble (CNE [expansion unknown]). Downstream, LETI's know-how flows toward the experimental pilot network of the EFCIS, a company in which the AEC holds a 30-percent share.

Under the new plan wherein the LETI is to "take a detached orientation," it will engage in research on integrated circuits that 5 years hence will be found on the industrial pilot network, and 10 years hence on industrial production lines. Studies must therefore start now on submicronic circuits that will group 10 million components on a single chip to assure French IC's of a good technological position in the market of the 1990's. The LETI will beef up its studies on materials flaws (the importance of which increases with the reduction of the geometries of components and which directly condition manufacturing yields); on materials-doping techniques by ionic implantation (owing to their ease of use, and to the homogeneity and reproducibility of the results obtained), possibly with simultaneous annealing; on masking (to develop the specificity of application of the three known techniques using visible light, electrons and X-rays); on etching; and on the designing of devices (throwing into the equation physical phenomena with the threefold aim of better understanding the operation of devices, of orienting the definition of a technology or the designing of circuits, and of developing CAO tools).

LETI-CNET: A Dual Purpose Step

There has been no lack of carpers during the past several months in the Grenoble region engaged in underscoring the fact that the two state organizations, the CEA/LETI and the CNET/CNS were carrying similar research simultaneously and in the same field of silicon integrated circuits. Officials of the two organizations

met recently to lay out a program that will be not only noncompetitive but also complementary with respect to research. As it turns out, even together, these two organizations could not possibly succeed in covering the entire field.

Their organization will make it possible to address different aspects of problems. The LETI is organized horizontally, with activities in the sensor/display and systems sectors. The CNET, on the other hand, works in nothing other than silicon integrated circuits, including the related research and pre-industrial development (which the LETI does not do). A memorandum of agreement has been signed between the two organization to avoid repeating the duplication of applied research efforts that could have been carried on jointly.

We have dwelt here mainly on the LETI's microelectronics activities, but its in-out components activities will also be the object of priorities as well as that of microelectronics equipment. Thus, in components, the LETI will intensify its work on thin-layer sensors, liquid-crystal displays for applications in telematics (with possible further extensions), and on microsystem electronics. As regards bubble memories, research will center on materials for the making of models with a capacity in excess of 4 megabits.

9238

CSO: 3102/68

ENERGY

SYNTHETIC NATURAL GAS PRODUCED IN COAL GASIFICATION METHOD

Duesseldorf VDI NACHRICHTEN in German 23 Oct 81 p 22

[Article: "Synthetic Natural Gas From Coal. A New Methanation Process Coupled With Coal Gasification"]

[Text] Synthetic natural gas produced from coal can make a much greater contribution to the public energy supply if the development of energy prices--especially the price difference between coal on the one hand and oil and gas on the other hand--provides the economic conditions for it.

Obtaining synthetic natural gas from hard coal has moved one step forward. In Oberhausen-Holten gasification of coal and methanation of coal gas were coupled in such a way that now synthetic natural gas is continuously produced. In respect to its heat content, its chemical composition and its burning characteristics, this gas is totally equivalent to natural gas. Thus, coal gas produced from coal, which has been used until now only as a fuel in industry and as a raw material in chemistry because of its quality, can be made usable for the public energy supply by converting it into synthetic natural gas.

In the case of the methanation process which Thyssengas, Ltd, the long-distance gas company in Duisburg, and Didier Engineering, Ltd, Essen, have developed, we are dealing with a technically and economically especially advantageous single-stage fluid bed process.

The development work was given special support by the Ministry for Research and Technology (BMFT).

The process was developed over a period of 6 years. From a chemical point of view it transforms carbon monoxide and the hydrogen in the coal gasification gas into methane (thus methanation) which is the major component of the natural gas.

From development to technical application the research project comprises three phases: The first phase of the development of the process was successfully completed this spring. It took place in a semi-technical experimental plant which produced up to 400 m³ of synthetic natural gas per hour. The plant is located on the works site of the Ruhr Chemie Co in Oberhausen-Holten, which also provided the necessary operating resources.

The second development phase is a pilot plant (large experimental plant) which is currently under construction. Starting October 1981 it is supposed to provide important design data for a planned industrial production plant and to produce 1,500 m³ to 2,000 m³ of synthetic natural gas per hour. The BMFT is supporting the experimental and pilot plant (total cost DM60 million) with about DM35 million of public funds.

An industrial plant as the completion of the development process--phase three--would be able to produce about 100 million m³ of natural gas per year starting in 1985. It would operate in a grid system with other coal gasification plants planned in North Rhine-Westfalia. But it is also conceivable to utilize the Thyssengas methanation process, which has the internationally protected name "Comflux" process, in other German and foreign coal gasification projects.

12124

CSO: 3102/87

ENERGY

FRG PROCEEDS CAUTIOUSLY WITH COAL CONVERSION PROGRAM

Duesseldorf CHEMISCHE INDUSTRIE in German Nov 81 p 657

[Text] For reasons of energy and industrial policy, the most modern and most promising processes for coal gasification and coal liquefaction are to be demonstrated on an industrial scale, taking into consideration the requirements of environmental protection. This was the decision of the Federal government on 21 October 1981 in setting forth additional steps for implementing the 30 January 1980 coal conversion program.

In the coal gasification sector companies have put forth planning studies on technology, economy, location and environment for seven coal gasification projects. Because of the problems they cause for the environment, coal gasification plants, among others, are required by the federal emission control law to secure a license. A license was already issued for one plant on the basis of this law. For the other plants as well, the companies are assuming that they can meet all environmental requirements.

As the planning studies of the companies show, there are such high economic risks that it is impossible to count on the realization of these plants without state assistance, or at least not until quite a bit later.

Therefore, the federal government has decided on the following kinds of assistance:

--investment subsidy up to 40 percent (up to 50 percent in justified exceptional cases)

--with the use of German hard coal, price equalization for 5 years to third country coal of maximum DM/ton hard coal units.

The projects which are the most promising in respect to energy and industrial policy are to be chosen for support by an application procedure. A total of DM1 billion has been included in the 1982 budget of the minister for economics and in the medium-term financial planning up to 1985.

In the coal liquefaction sector there are recommendations for three large projects to hydrogenate hard coal and one project to hydrogenate brown coal. A planning study is available, two others are to be completed by the end of 1981.

The basis of coal liquefaction is the further developed IG Farben process for direct hydrogenation, by means of which even today non-usable heavy oils and refinery residues can be processed.

Because of the problems they cause for the environment, liquefaction plants are subject to the same licensing procedures as coal gasification plants.

The companies assume that they can meet all legal environmental requirements--even if at substantial investment cost.

In respect to space requirements only a limited number of locations in the FRG can be considered. Liquefaction of hard coal is--even with the use of imported coal--not yet economical either. Thus, today 1 liter of gasoline made from German hard coal would still cost almost twice as much as gasoline from petroleum.

In the second half of 1982, after evaluating the planning studies, the federal government will decide about additional help to realize one, at most two industrial coal liquefaction plants. The granting of a hydrogenation preference will be specially tested for the operation of such plants. To reduce the technical risks of the large plants a program of component development for the purpose of advance testing of especially critical parts will be implemented. There are approximately DM 100 million available for this in the budget of the minister for research and technology.

12124

CSO: 3102/87

ENERGY

DEMONSTRATION COAL LIQUEFACTION PLANT IN VOELKLINGEN

Frankfurt/Main FRANKFURTER RUNDSCHAU in German 21 Nov 81 p 5

[Article by Guenter Hollenstein: "The Saarland's Dreams Of Coal Liquefaction: First Pilot Plant In Voelklingen; Many Question Marks Concerning Its Rationality"]

[Text] Necessity is the mother of invention, according to the proverb. And because the population of the Saarland is not exactly blessed with a flourishing economy--its steel mills have been in critical straits for years and the unemployment rate is correspondingly high--the state's politicians have been grasping at every straw that might help them out of their misery. The praise was practically gushing, when a pilot coal liquefaction plant was put into operation recently at Voelklingen.

Minister of Economics Werner Klumpp (FDP) attested to the "vital interest" of the Saarland in coal liquefaction. The German Federation of Labor Organizations (DGB) calculates that the construction of a large-scale plant, which is scheduled to follow the pilot installation after the end of 1983, should "directly" generate some 3500 new jobs. And the head of British Petroleum in Germany, Helmuth Buddenberg, who with its daughter firm Gelsenberg, shared half the costs of the "Society for Coal Liquefaction" (GFK) with the Saarberg AG, boasted of its "high political priority." There was only one reservation. The chairman of the Saarland SPD, Oscar Lafontaine, was heard thinking aloud about who was to finance the large-scale plant ("a ghost project") estimated to cost some DM 3 billion. This produced the reproach from the governor's office that he was being "an irresponsible opposition politician."

What is now being tested in Voelklingen had once seen better days. The hydrolization process which was originated by IG Farben in the 1920's, was able to produce some 4 million tons of motor fuel per year in 1943/44, when there were 12 such installations in Germany. The technical director of the GFK expressed his regrets that continuity had been broken off after the war. Now, in a time of ever higher oil prices, coal liquefaction has again come back into its own.

Economic considerations have little to recommend motor fuel derived from coal, no matter how high the price of oil might rise. One liter of super benzene obtained from coal could not be sold for less than DM 2, according to calculations done at the end of 1980. Within this hypothetical price is included the petroleum tax, though not the costs for marketing or transport. Its proponents are therefore talking of a "synthetic preference," meaning that the federal minister of finance should renounce the tax placed upon benzene produced in this fashion.

But even its yield is limited. The degree of efficiency of a hydrolization plant lies between 55 and 60 percent, while traditional refineries operate at an efficiency of over 80 percent. Because the production of a ton of domestic coal costs up to DM 230, while a ton of less "wage intensive" foreign coal extracted through strip mining costs DM 40 to 50, the GFK sees technology export as its principal task. Alongside the "economic significance" ascribed to the large-scale hydrolization plant (output: 2 million tons annually) and the "energy-political effect" because less oil would need to be imported, Wuerfel sees real technology export opportunities in those countries where coal is cheap.

Yet here the competition already has a head start. The Americans now have two plants in operation, the Japanese are already working on the process; Australia, South Africa and Canada are where sales are expected. Significantly, Veba and Ruhrkohle have also committed themselves to the cause of coal liquefaction. They have set up a pilot installation in Bottrop which is now processing some 200 tons of coal daily. In contrast, the Voelklingen pilot plant with its daily 6 tons suggests a toy. Whether the federal government will make any generous contribution to the construction of a large-scale plant is still an open question.

9878

CSO: 3102/91

ENERGY

BRIEFS

FUEL OIL-COAL MIXTURE--After joint research efforts carried out by the French Refining Company (Total Group), CERCHAR [Center for Studies and Research on French Coal Mines], the national company Elf-Aquitaine, Creusot-Loire and the IFP [French Petroleum Institute], on a mixture consisting of coal in a fuel-oil suspension, the first test in France as well as in Europe will be conducted using an industrial trial boiler. This boiler, designed to burn standard heavy fuel oil to produce 50 t/hr of steam, will be fired with a fuel oil-coal mixture. The test will take place at Montceau-les-Mines (Saone-et-Loire) in a boiler room of the Houilleres du Bassin et du Midi. It will consist of operating a pilot fuel oil-coal mixture production plant with a capacity of 8 tons of mixture per hour. This unit will feed the boiler through an intermediate 100-m³ fueling tank. The test will also provide a study of the use of such a mixture in a boiler in an industrial environment and of the equipment and operational changes that will have to be made. The fuel oil-coal mixture, which contains up to 50 percent of coal by weight, can be produced at a price somewhere in between that of coal and that of heavy fuel oil. It also has the advantage of being transportable, unloadable and stockable by the means normally used for heavy fuel oil. The installation, now under way, will be operational by February 1982 and the tests will be conducted throughout the first half of 1982. The operation is being financed to the extent of 30 percent by the Ministry of Industry, under a program that since 1980 has been carried forward by the same partners and has been aided by the DGRST [General Delegation for Scientific and Technical Research]. This initial program has been centered on obtaining stable coal suspensions in fuel oil and on testing their use and combustion characteristics in pilot installations. [Text] [Paris CHIMIE ACTUALITES in French 20 Nov 81 p 12] 9399

CSO: 3102/98

INDUSTRIAL TECHNOLOGY

RENAULT PUTS SECOND-GENERATION ROBOTS INTO SERVICE

Paris ELECTRONIQUE ACTUALITES in French 13 Nov 81 pp 1,3

[Article by G. Bidal]

[Text] The Regie Renault is currently putting into operational service the first several of its second-generation robots--robots, that is, utilizing a shape-recognition system. This system can be considered the first industrial version of of a robot capable of taking hold of nonplanar parts at three-dimensional random.

The term "robot" has tended to become inflated with usage over the past several years, but with the latest models developed at Renault's Division of High Technology (DTA) there can be no doubt: They are truly second-generation robots capable of reacting to the environment, thanks mainly to their system of image analysis by means of video cameras. The Regie is exhibiting at the Palais de La Decouverte in Paris a vertical 8-axis robot capable of taking hold of a complex isolated part placed on any position whatever on a moving belt. Through the use of a standard video camera, the system analyzes a square image 1 meter on a side in 256 x 256 values of gray. By calculating the barycenter, then the orientation angle, it is able to recognize the face on which a nonplanar part is resting. The picking up of the part and positioning of it on a machine are functions of this image. Without going into details of the system (obviously, Renault is not divulging its recognitional algorithms), we can simply say that it is a technique for measuring characteristic dimensions, then comparing the results with the different values learned for each dimension in each possible position.

But Renault is going a step beyond this with a shape-recognition system that is already in preoperational service in many Renault plants, which gives different robots the ability to select and pick up nonisolated, randomly positioned parts. A case in point is a prehensile robot that feeds a machine tool from a pile of parts in three orthogonal axes (in this particular case, pallets of crankshafts). The shape-recognition system operates in two stages: First, it isolates each part in the pile (at this stage, imaging data are correlated using a supersonic telemetering system to determine the height of the top of the pile). In the second stage of the operation, once the part's contours have been isolated, its position is determined by the method described above for the recognition of isolated parts. To our knowledge, this is the first industrial recognitional system of this type,

operating, that is, on a 3-dimensional basis. The industrial random-pickup systems in use to date work, for all practical purposes, in a single plane.

A Universal Calculator

From the electronics standpoint, Renault has developed its own 16-bit control calculator, called Version 5. Developed by the DTA jointly with Renault's SMC [expansion unknown] subsidiary, it is being added little by little to all the robots installed in Regie plants. This busbar-type modular calculator is designed to manage fixed-cycle manipulators as well as second-generation shape-recognition robots, whatever the application of the latter (painting, welding, manipulation). This calculator will soon be made compatible with Intel's standard SBC, so as to at, one and the same time, increase its modularity, take advantage of new interface possibilities, and facilitate its manufacture and marketing in the United States by Cybotech, the joint Renault-Ransburg subsidiary. Formed a year ago, Cybotech has begun building Renault robots and, at work on its own plans, is in the process of spinning off from the Regie to enter the formidable market that is opening up in the United States to replace almost entirely the automotive industry's production tooling (representing investments totaling over \$80 billion).

In France, the shape-recognition system, like all the group's robotics product line, is to be manufactured by Acma-Cribier. After having produced its first electrically powered robot, the TH 8, Acma will now market a new hydraulically powered vertical robot, the V 30 (for the handling of loads up to 30 daN). With this model, Renault will have a complete gamut between 5 and 80 kg. As of now, this gamut can be considered, from a practical standpoint, closed. The principal developments will now be centered on software, sensors and electronics: Thus, it is planned to insert the signal-processing electronics in the base of the robots, which will reduce the interconnections between the calculator and the robot to a single small cable.

9238

CSO: 3102/67

INDUSTRIAL TECHNOLOGY

PLAN PRESENTED TO DEVELOP MACHINE TOOL INDUSTRY

Paris AFP SCIENCES in French 3 Dec 81 p 9

[Text] Paris--At the Council of Ministers meeting of 2 December, the minister of industry presented a plan to develop the machine tool industry, which was drawn up at the request of the president of the Republic and which envisions doubling the volume of French machine tool production between now and 1985. This plan is based on the rapid development of numerically controlled machines, which is one of the keys to the recovery of the domestic market. The plan is designed to contribute to the development of exports and provides for the retraining of personnel to qualify them for more skilled jobs.

For the period 1982-1984, the Council of Ministers has decided to proceed along three lines as follows:

- 1) Reorganization of the machine tool industry and of the principal suppliers of components:

To replenish the funds of the enterprises themselves, meet the industry's investment and innovational needs and develop exports, the financial requirements have been calculated at Fr 4 billion.

The state's contribution, for its part, could be as high as 50 percent of the required funds. The beneficiaries of this unprecedented effort would, for their part, be asked to sign contracts that would stipulate their developmental undertakings.

- 2) Launching of a program of technological innovation:

Multi-year collective research contracts, totaling Fr 200 million, will provide for the institution of three national technological axes, giving rise in turn to regional prolongations.

Each enterprise's own research effort will be developed.

3) Procurement of State-of-the-Art Equipment:

In 1982, the total available for improvement-incentive loans to the robotics industry will be substantially increased over 1981, when it was already Fr 1.2 billion.

Moreover, the procurement of state-of-the-art equipment and accessories will be encouraged, particularly in the case of the PMI's [Small- and Medium-Size Industries].

Lastly, government orders for machine tools, the total of which will be brought up to Fr 1.2 billion over a period of 3 years, will be centered on modern equipment, with a view to providing, in the educational and occupational training sectors, improved training in new techniques.

9399

CSO: 3102/98

SCIENCE POLICY

MINISTRY OF RESEARCH, TECHNOLOGY TO BE REORGANIZED

Paris AFP SCIENCES in French 3 Dec 81 pp 1-3

[Text] Paris--A reorganization of the Ministry of Research and Technology, involving the elimination of the DGRST [General Delegation for Scientific and Technical Research] and the DIT [Delegation for Innovation and Technology], as such, was decreed on 1 December.

Actually, the DGRST--which had already been reassigned to the Ministry of Research -- and the DIT--which had been under the tutelage of the Ministry of Industry but which Mr Jean-Pierre Chevenement had taken over as part of his functions when he took office--have merged to form two principal directorates within the Ministry of Research: The Directorate for General Policy and the Directorate for Scientific and Technological Development and Innovation.

In accordance with the decree of 1 December, published in the JOURNAL OFFICIEL of 2 December, the executive function of the Ministry of Research and Technology will be organized as follows:

1. An Office of Science and Technology.
2. A General Policy Directorate;
3. A Directorate for Scientific and Technological Development and Innovation;
4. An International Affairs Service;
5. A Forecasting and Evaluation Center;
6. An Interministerial Office of Scientific and Technical Information
7. Minister's private departmental staff and services:
 - Minister's Private Office staff,
 - Press and Public Relations Office,
 - Highly-placed Defense Ministry Official.

The Ministry of Research and Technology will have a regional delegation in each region.

The Office of Science and Technology will consist of departments and will be under a Head of the Office of Science and Technology.

It will examine and follow up the scientific and technical aspects of all matters within the province of the Ministry, particularly as regards the Office's relations with the other bodies forming part of the Ministry, and to this effect will establish all the liaisons necessary with the bodies concerned.

It will provide the Ministry's directorates and services all the scientific and technical elements needed by them to accomplish their missions and will take part with them in the definition and implementation of the Ministry's policy in the domains of research and technology.

The General Policy Directorate will:

- Gather and disseminate statistics relative to scientific research activity and technological development. It will maintain an inventory of the nation's potential in this domain;

- Define the general guidelines of research and technological development at the programs and overall-balance-of-effort levels, and will oversee their implementation. It will contribute to the drawing up of the Plan and of program budgets in the research and technology domains;

- Form interministerial scientific and technical research committees;

- Allocate budgetary funds to the bodies or agencies under the tutelage or joint tutelage of the Ministry and oversee their utilization. It will receive and examine all proposals relative to research and development funding submitted to the Ministry for purposes of coordination, allocate the funds and audit their utilization.;

- Provide the tutelage or joint tutelage of the bodies or agencies forming part of the Ministry;

- Conduct the general management of the Ministry.

The Directorate for Scientific and Technological Development and Innovation will foster by all possible means the advancement of French scientific and technical research, and will:

- Maintain relations with the enterprise sector, particularly with the national enterprises; propose and put into operation, jointly with the interested ministries, the means, particularly financial, to ensure the rapid progress of the research, technological development and innovational effort;

--Examine the research programs of national enterprises and in this connection takes part in the drawing up of development contracts between the state and these enterprises;

--Study, propose and put into operation the means to valorize and disseminate public sector research to the enterprise sector; establish to this effect all the necessary liaisons with the bodies or agencies concerned;

--Put into operation all the incentive credits in the Ministry's budget designed to foster cooperation between government bodies and enterprises and valorization of the priority programs in the research and technological development domains;

--Represent the Ministry in interministerial initiatives concerned with defining and putting of technological and industrial policy into operation;

--Exercise tutelage over the National Agency for the Valorization of Research and all the functions previously exercised with respect to industrial and technical research, particularly as regards the activity of the industrial technical centers, by the DIT;

--Jointly with the Regional Delegations of the Ministry, which it coordinates, and relying upon the International Affairs Service, vitalize the tissue of French industry from the standpoint of technological development and innovation.

The International Affairs Service will:

--Jointly with the interested ministries, act on problems of international scientific and technical cooperation. It will foster and coordinate in these domains the action of the research and technological agencies;

--Jointly with the Ministry of Foreign Relations, orient the activity of the scientific advisers and attaches abroad. It will gather and keep up to date information on the scientific and technological policies of foreign countries;

--Jointly with the interested ministries, promote the product of national research and technologies abroad and provide support for the mobilization of all French research and technological agencies to serve the developing countries.

The Forecasting and Evaluation Center, which will have its own budgetary funds for this purpose, will:

--Study the evolution and the future potentials of research efforts and technologies from the national and international standpoints;

--Evaluate the progress and impact of research and technological developmental programs.

SCIENCE POLICY

BRIEFS

RESEARCH BUDGET ADOPTED--Paris--The senators adopted the budget of the Ministry of Research and Technology on 2 December. "We shall see to it that, by the end of this decade, France will be the world's third-ranking scientific and technological power," said the minister, Mr Jean-Pierre Chevenement after having recalled the six priorities of the present government: biotechnology, rational use of energy and new sources of energy, the electronics and robotics sectors, research on employment and working conditions, research in cooperation with the developing countries... "These priorities are not exclusive," he said. [Text] [Paris AFP Sciences in French 3 Dec 81 p 10] 9238

CSO: 3102/97

TRANSPORTATION

BRITISH DIRIGIBLE: MODERN MATERIALS, NOVEL PROPULSION

Paris SCIENCES & Avenir in French Nov 81 pp 7-8

[Text] The long-talked of "new dirigible" has finally appeared in the form of a palpable realization: Near the end of September, at Cardington, a "lighter-than-air" craft took to the air for its first flight, which lasted 2 hours. This "supple" 5,000-m³ dirigible, capable of carrying a 2-ton payload, appears somewhat disappointing at first glance. Its architecture is actually ultra-conventional, and nothing seems to distinguish it from the designs of the 1930's and even earlier ones.

Its promoter, the British firm Airship Industries, affirms nevertheless that the Skyship 500 (or AD-500) is novel as regards three essential features: The lightness of the cabin (made of Kevlar for the most part), its vastness and comfort notwithstanding; the use of a sophisticated material comprising a polyester fabric, a polyurethane coating and, on its inner surface, a "gas barrier" film that reduces its permeability to helium by 80 percent (thus reducing its losses, which are costly, to one-fifth), for the skin of the hull; and the use, for its propulsion, of two steerable, streamlined, variable-pitch fans, each driven by a Porsche 200-hp flat-6 engine.

It is the latter feature that is the real innovation, the others being merely the use of modern materials and technologies. The steerability of the fans puts at the pilot's disposal a true vectorial thrust that is rapidly adjustable in intensity and direction. In the case of a conventional dirigible, the equilibrium between its buoyancy and its weight is always difficult to obtain and depends on a number of hard-to-control factors. In the case of the AD-500, the pilot will at all times have control of this equilibrium, even (and especially) at a stationary altitude; the lift-off as well as the return to ground--which are the most difficult phases in the use of a lighter-than-air craft--will thus be considerably easier.

The fact is that there has already been a first AD-500, which began its tests with successful results in February 1979. It was quickly destroyed by a storm as the result of an unwise maneuver. The second AD-500 bears a close brotherlike resemblance to it, and for good reason: It is identical in every respect, except for a few very minute changes (mainly, reinforcement of the forward mooring cone). Everything, or almost everything, with respect to the operation of dirigibles must now be relearned...

As far as can be judged, the new AD-500 is attracting sufficient interest to justify the building of a second one, which is already under way--with, as for the first one, a substantial participation by French industry: The skin, the valves and the rigging of the nacelle were designed at Issy-les-Moulineaux and fabricated at Cognac by Aerazur-EFA (Zodiac group); the special fabric is supplied by a firm of Roubaix, Pennel et Flipo. And Airship Industries has now announced an AD-600, a little longer (53.5 meters versus 50) whose capacity (6,400 m³ versus 5,100) and increased power (2 x 250 hp) will mean greater speed, more range and a payload capacity of 3 tons.

Its projected uses? In the first place, surveillance of coastal zones under ideal conditions of comfort (hence efficiency) for the crew. Announced cruising ranges are up to 20 hours for the AD-500 and 70/80 hours for the AD-600; but the observers have lounge berths and a real mess hall. Economy of operation is another strong incentive to the use of lighter-than-air craft: In this case, fuel consumption will be infinitely less than that of a plane or helicopter.

Another projected use: Antisubmarine warfare (airborne radar), the seeding of mines or their destruction, through the use of a small towed glider near the the sea surface, and, in sum, transportation in various forms.

Of course, this is still a far cry from futuristic dirigibles of the "flying saucer" type or other configurations conceived by certain inventors. The Skyship 500, however, if it succeeds in taking hold, will impart to the latter a new credibility. It remains to be seen whether the new dirigible will prove too susceptible to atmospheric conditions. It is nevertheless a good bet that the Skyship 500 will eventually materialize in a conventional, hence reassuring, but probably efficient form. It is worth following closely...

9399

CSO: 3102/82

TRANSPORTATION

INDEPENDENT COMPANY DESIGNS 'VSS' FOR FIAT

Paris L'ARGUS DE L'AUTOMOBILE in French 29 Oct 81 p 10

[Article: "IDEA Institute: An Effective Backup Institute for the Builders"]

[Text] Renaissance Italy had its condottieri, remarkable military leaders who did not hesitate to transfer their services, complete with weapons, baggage and troops, to their erstwhile enemies, provided the latter paid more.

The industrial--and planetwide--war that rages in the automobile sector has fired the rebirth in Italy of the "product and industry condottieri." First, Giugiaro created Ital Design, which was capable not only of designing any vehicle but also --a new--of industrializing it: The only thing its builder client had to do was actualize the tooling conceived by Giugiaro's engineers and launch the mass production of the model...

The IDEA [expansion unknown] Institute, created 4 years ago, has gone a step further. The team working with Doctor of Engineering Franco Mantegazza is capable of creating a new automobile from A to Z, from its styling and mechanical design through its production cycle to and including its marketing.

Indispensable

IDEA's remarkable VSS (see L'ARGUS DE L'AUTOMOBILE of 8 October) brought out by Fiat a short time ago was designed and fully built by the IDEA Institute before being evaluated and tested by Fiat. It is not to be concluded from this that Fiat's design division is incapable of designing and actualizing a "subsystem-type vehicle" such as this; the fact is that it is 100 percent taken up in tasks that have been set up for it by plans of long standing, so that even a few of its engineers could not be detached to work on a "parallel" project, as ingenious as the VSS though it might be.

Most ingeniously, Fiat heavily financed the project and left it entirely in the hands of IDEA's engineers, not without having first reduced the scope of their preliminary design plan, which would have taken too long and been too costly to carry through to completion.

This "parallel" technique, a source of creativity worthy of emulation, is not new: However, it is practiced more in its internal form (as at GM) than its external one, although it would seem that the latter is more productive. The creative freedom enjoyed by designers external to the builder is total. Franco Mantegazza, the founder of IDEA and a former Fiat engineer, has made of this freedom a cardinal principle of the firm: He categorically refuses participation by any of its clients in the capital of the institute so as to be free of any pressures. He is thus in a position to recommend this or that new solution, without being obliged, as he would be if he worked within the confines of a group, to settle for other perhaps less favorable solutions because they could more easily be implemented by a subsidiary or because they were more economically viable.

At one time, beech trees were planted around oaks to induce faster and straighter growth; today, builders place their design divisions in competition with small, more flexible, rapid and creative firms, to keep their engineers from getting too wrapped up in red tape and resting on their laurels.

A Chip Off the Fiat Block

It is not without good reason that Fiat is IDEA's first big client: Ninety percent of the engineers who make up the Institute's "gray-matter" capital came to it from Fiat. Its creator, first of all, made his career at Fiat and in France, where he worked. But Franco Mantegazza is not an ordinary figure. Despite his very Italian name, he admits to speaking German better than Italian! At the end of the Second World War, he left disarranged Italy to finish his engineering studies at Zurich's Polytechnicum. There he made friends with young Germans in the same situation as his own. Thus, even today, Dr Piech (the head of technology at Audi-NSU) and Dr Rademacher (BMW) have remained his friends, which attests to the high technical circles in which Franco Mantegazza has always traveled.

His assistants? They are named Cordiano, Hruska, Montanari, Puleo, Bossaglia, Formia, Greco, Garnero, De Silva: All have occupied very high positions of responsibility for the creation of new models, engines or production methods at Fiat, Iveco, or Alfa Romeo. Working with them is a string of specialists in metals, stamping, methods, automation, industrialization and organization in general. They are--for example, Ghebbano, Dullio, Sibona--very well known and have already made their mark as high-level consultants with Pininfarina or Ital Design.

Being Different To Create

Reading this impressive list of "tenors," one might be led to believe that the IDEA Institute lives only on the automobile. This is far from being the case. IDEA's most prestigious associate is none other than Oscar Niemeyer, the architect of Brasilia, number one worldwide in his specialty. The former vice president of IDEA, temporarily detached from it on a year's sabbatical, is Renzo Piano, the architect who calculated the structures for Beaubourg. IDEA is also a "climate" in which specialists in all disciplines are assured of being able to exchange ideas and techniques with full freedom. This is why IDEA's head office is a marvelous villa, baptized Cantameria, perched atop the hill of Moncalieri, near

Turin, in the middle of a dense forest. In this pleasant environment which towers over Turin--literally and figuratively--bold projects are being worked out concerning the automobile, architecture, metallurgy, and new techniques in general. Transient guests are welcomed with open arms, regardless of their nationality, and may work in total freedom; if the drawings we publish herewith appear to be annotated in faulty French, Italian or English, you may rest assured they were conceived by Japanese architects!

Keeping IDEA Alive

The VSS is IDEA's first "major work" to have been rendered public, but it will not be the last. The Institute competed (against Porsche) for the design of two vehicles for the Soviets. The match was a draw: Porsche will design one of them, IDEA the other. While the new Soviet "Zaporojets" will be 100 percent IDEA, the Institute is also preparing a complete redesign of the instrument panels and air conditioning of Alfa Romeos: From the basic Alfasud to the Coupe V6, all units will be "modular," efficient and reliable. Another project for Alfa Romeo is about to be completed: The design of an Alfa Romeo 4x4 (of the Lada type) which could bring the Milanese firm out of the red. Thus, Alfa Romeo, which had found it necessary to join with Nissan to produce a new vehicle rapidly, was quick to get IDEA (where engineer Hruska, former chief engineer and manager of Alfa Sud, is vice president) to rapidly create a new innovative model.

An amusing detail: The Soviets, finding IDEA's financial standing a bit limited (600 million lire, or approximately Fr3 million, invested by F. Mantegazza) insisted on increasing it. F. Mantegazza refused all their offers and got (within his own family) Count Charles Ferdinand di Boromeo (owner of the islands of the same name) to back him with a minority share and the presidency of IDEA!

Although the automobile represents 80 percent of IDEA's activities, the architectural sector is no less creative: innovative apartment systems, sports and social centers--also modular--and superb industrial designs attest to the fact that it works fast and well.

Always Out Front

At Villa Cantameria, Dr Mantegazza showed us super-lightweight crankcases made of magnesium: The new alloy developed by IDEA does not burn, is easy to fabricate and to machine. Although it is still a bit more costly than the second-melting aluminum generally used in the industry, it is much less so than first-melting aluminum. It could also free certain industries of the monopoly exercised by seven big companies that control the aluminum market. The people at IDEA know how to live with the times, address the problems of raw materials and energy, and evaluate in their true perspective the economic and political impacts of each discovery.

Dr Mantegazza is also working on the development of Alfasud's 4-cylinder pancake engine. Conceived by his friend Hruska, the one he calls "the greatest living prophet of the automobile," this remarkably compact, low-profile, reliable power plant could be in for a revival thanks to IDEA...although we were not told exactly how this might be brought about.

Getting Back to Basics

The osmosis that prevails between the different engineers--the extremely effective process of "relaxed creativity"--at IDEA sometimes brings forth surprising solutions to known problems. Thus, the chassis of a multiple-use, farm utility vehicle was made of reinforced concrete, a solution that turned out as highly resistant and reliable as it was cheap to produce.

The architects designed the IDEA double roof (rejected by Fiat) starting from the (basic) idea that it is idiotic to consume energy with an air conditioner when, from 20 km/hr up, the displacement of the automobile can provide the necessary conditioning if the roof (with a Venturi opening and proper diffusion of the air) is correctly designed.

Another conceived in the Villa was that of flooring with "technical tunnels" for cables and channelings--which could have led to the development by IDEA of an injection-molded platform floor.

Refused by Fiat, the idea was ceded to Mantegazza's friend Piech, who made good use of it: The star exhibit at the Frankfurt Show was his Auto 2000 featuring precisely a "plastic and fibers," solid, anti-corrosion floor capable of revolutionizing fabrication methods, in that the seats can be mounted on the flooring platform before attaching the body to it.

This way of getting back to basics, of expanding the techniques applicable to the automobile, is characteristic of IDEA and of all its small creative teams. A realist, Franco Mantegazza sees before him an ever widening niche. "The automobile has become a barren product," he says, "in that investment of "ex novo" creativity, getting back conceptually to the basics of every element, is hardly feasible any more because it is too costly even for the big builders."

Knowing How to Choose One's Counsellors

Although it has its own pool of the world's best brains and its own very powerful calculator, IDEA farms out certain problems to "super specialists" such as Open Design (Aldo Sessano, father of Mitsubishi's Lancers) for styling, IPS [expansion unknown] for bodies, UCS [expansion unknown] for upholstery, IC [expansion unknown] (regular consultants to Pininfarina and Alfa) for planning, Emo Electronics for electronics. For the VSS, the vast bundle of resistance calculations for the "reticular frame" was done by the British OVE-AROP [expansion unknown] and Partners. On the other hand, the extraordinary knowledge of plastics displayed by IDEA in the design of Fiat's VSS is that of its own team. Franco Mantegazza explains his rationale (laughingly) saying that until now the best part of his revenues come from a plant for manufacturing plastic injection machines and molds! "Thus, I keep up to date not only on what is being done now but also on what is being planned for years to come. I claim no merit for this."

Remaining in Europe

Personal merit or none, IDEA's staff is unquestionably one of the most extraordinary we have ever encountered. Such enthusiasm, such competence, such dedication to beauty and to effectiveness must remain European: This is the desire of IDEA's "phalanstery." Advice to the builders of old Europe: You have in your hands one of the keys to the future of the automobile. Do not let the Japanese and the Americans--always the most numerous at Moncalieri--use it before you do: You could rue the results!

9399

CSO: 3102/75

TRANSPORTATION

RENAULT 5 LINE IMPROVED FOR BETTER MILEAGE

Paris L'ARGUS DE L'AUTOMOBILE in French 5 Nov 81 p 1

[Text] Save gas! This is the aim of the Regie Renault, which month after month remodels its line to offer its customers ever more conservative models.

Looking back, in 1979 the Renault 5 TL and GTL reached a gas-mileage milestone at under 5 liters per 100 km at 90 km/hr. Research management was still not satisfied and continued its efforts. In April 1981, the new Renault 5 Automatic improved its mileage by 9.4 percent, and in July 1981 the basic 1982 Renault 5 improved its mileage by 10 percent.

Today, it is the Renault 5 GTL's and the Renault 5 TS's turns to mark up a new mileage gain.

The 5 GTL: 4.5 Liters per 100!

Thanks to a new 5-speed transmission and a new front-end spoiler shield the Renault 5 GTL has taken another step forward in terms of mileage. The gain is 6 percent and the average of the three UTAC [expansion unknown] standards has been lowered from 6 liters per 100 km to 5.63 liters per 100 km, the respective mileages being: 4.5 liters per 100 at 90 km/hr, 6.1 liters at 120 km/hr and 6.3 liters in the city. This 5-speed Renault 5 GTL costs 39,000 francs in the 3-door version and 40,400 francs in the 5-door version, or, only 500 francs more than the 4-speed versions.

The 5 TS: 5.2 Liters per 100!

For the 1982 Renault 5 TS, the mileage gain is even more impressive: 13 percent. Thanks to a new 1,397 cm³, 63 hp engine, a 5-speed transmission and a new spoiler, the 90-km/hr, 120-km/hr and city mileages drop respectively from 5.8 liters to 5.2 liters, from 7.8 liters to 6.7 liters, and from 9.2 liters to 8 liters, with a top speed increase from 151 km/hr to 154 km/hr. The 3-door Renault 5 TS is being offered at a price of 41,300 francs.

Fully equipped Renault 5 TX

The top of the Renault 5 line has now been completed by a "TX" model at a price of 47,300 francs for the 5-speed version and 48,900 francs for the Automatic version. These versions, fully equipped and therefore without options, feature power steering and electric window raisers, tinted windshield and windows, a leather-sheathed steering wheel, alloy wheels, etc. And at the summit, there is still the Renault 5 Alpine Turbo at the current price of 55,000 francs.

18 GTS: 5.9 Liters per 100l

The 18 GTS 4-door sedan and station wagon are now equipped with a 1,647-cm³, domed cylinder head, 96-hp engine, an increase of 17 hp. Their maximum torque increases from 12.5 mkg at 3,000 rpm to 13.5 mkg at 3,500 rpm. At the same time, their 0 to 100 km/hr acceleration time decreases from 12.8 seconds to 12.1 seconds. Yet their mileage has been improved from 6.1 liters to 5.9 liters/100 km at 90 km/hr, and from 8.2 to 7.8 liters at 120 km/hr. In the city, however, it is now 10 liters per 100 km in lieu of 9.9 liters.

The station wagon in this GTS version, is new. It has received special treatment, characterized outwardly by its functional, chromium roof rack, and internally by its plush upholstery. Like the 4-door sedan, it has an internal rear-view mirror control, electric front-window raisers, centrally controlled electromagnetic door locks, an instrument-panel-mounted oil level indicator, etc.

In addition, the entire 1982-built Renault 18 line has benefited from improvements affecting their road performance (decreased flexibility of front-end suspensions, stiffening of the rear-axle assemblies, new calibration of the shock absorbers) with a resultant reduction in body sway during turns and braking. Passenger comfort is improved by a new seat-cushion design, while leg-room is increased by a modification of the front seats (in the 4-door sedan) that offers rear-seat passengers more foot- and knee-room.

The Renault 18 GTS is priced at 54,200 francs for the 4-door sedan and 58,100 francs for the station wagon.

9399

CSO: 3102/83

TRANSPORTATION

BRIEFS

NEW GENERATION FIAT 127--Fiat will shortly market a new-generation Fiat 127 which has been completely restyled with respect to the older version and which has undergone certain technical modifications. The line will include three versions of the 900-cm³, 4 hp 127, one of which will have a 5-speed transmission, and a 1,300-cm³, 7 hp 127 Sport, also with a 5-speed transmission whose ratios, however, have been revised to improve performance. Having already sold 5 million cars since its creation, the 127 line bids fair to intensify its career, the more so since, pending the marketing of the UNO, planned for next year-end, a Diesel model is scheduled to appear in January 1982. The 127 Sport 1300 is rated at 165 km/hr peak speed and a time of acceleration from 0 to 1 km of the order of 33.7 seconds. A great deal of work has gone into its carburetion to improve specific consumptions, but Fiat has not yet divulged its figures. As to its appointments, the new 127 will have new-style seats, a "functional" instrument panel, and internal insulation that will improve the environmental noise factor. The new 127's will be available beginning in January. They will range in price from 28,000 francs to 33,000 francs. [Article by P.H.] [Text] [Paris LE MATIN in French 30 Nov 81 p 17] 9399

CSO: 3102/83

END

END OF

FICHE

DATE FILMED

Feb 8, 1982